

MIKE Powered by DHI Software

FEFLOW[®] 7.0

Finite Element Subsurface Flow
& Transport Simulation System

Installation Guide

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1 Introduction

The FEFLOW simulation package contains the following main programs along with additional software tools:

FEFLOW® 7.0

FEFLOW is an interactive finite-element simulation system for modeling 3D and 2D flow, mass, age and heat transport processes in groundwater and the vadose zone. It is available for:

32-bit operating systems

- Windows XP, Vista, 7, 8, 8.1, Server 2003, Server 2008, Server 2008 R2, Server 2012, Server 2012 R2

64-bit operating systems

- Windows XP x64 Edition, Vista x64 Edition, 7 x64 Edition, 8 x64 Edition, 8.1 x64 Edition, Server 2003 x64 Edition, Server 2008 x64 Edition, Server 2008 R2 x64 Edition, Server 2012 x64 Edition, Server 2012 R2 x64 Edition

FEFLOW for different Linux distributions will be available for download from www.mikepower-edbydhi.com soon.

For evaluation purposes, it is possible to obtain a fully functional but time-limited license. Do not hesitate to contact your local DHI office in case you are interested.

FePEST

FePEST is a software providing a graphical user interface for linking FEFLOW models with the software PEST (developed by John Doherty, Watermark Numerical Computing). PEST is a model independent tool for parameter estimation and prediction, sensitivity and uncertainty analysis and model calibration. FePEST is automatically installed with FEFLOW.

FEFLOW® Viewer

FEFLOW Viewer is free software for visualizing FEFLOW models and results and for postprocessing purposes. FEFLOW Viewer is automatically installed with FEFLOW.

WGEO® 6.0

WGEO® is a sophisticated georeferencing, geo-imaging and coordinate transformation software developed by DHI-WASY GmbH. A license for WGEO® Basis and the flexible 7-parameter transformation comes with each FEFLOW license and is installed automatically.

WGEO® is provided for the Windows platform.

1.2 Installing FEFLOW (Windows)

1.2.1 Introduction

FEFLOW 7.0 provides powerful state-of-the-art editing, visualization and evaluation tools as well as computational methods for most kinds of groundwater models.

To run FEFLOW in single-seat mode, the DHI-WASY License Manager NetLM has to be installed locally.

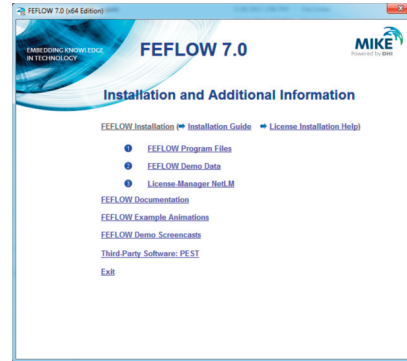
If the license shall be acquired from a license server using a network connection (network license required), no local installation of NetLM is necessary.

A license server can be set up by installing NetLM on that machine. The installation of FEFLOW on the same computer is not necessary.

A typical FEFLOW installation on a Windows operating system consists of three steps:

- Installation of FEFLOW and additional programs
- Installation of the demo data package
- Installation of the DHI-WASY license manager NetLM

After inserting the memory stick into a USB port, run **Starter.exe** from the windows directory on the memory stick.



The hyperlinks in the overview can be used to start the different parts of the FEFLOW installation, to view the documentation and example movies, and to install third-party software.

FEFLOW is automatically installed as a 32 bit version on 32 bit systems, and as 32 and 64 bit versions on 64 bit operating systems.

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2.2 System recommendations

FEFLOW applies the Open Graphics Library (OpenGL) for hardware-based graphics acceleration. An OpenGL-compliant graphics adapter greatly improves graphics performance when working with 2D and 3D models.

- Experience has shown that medium-priced graphics adapters of brand manufacturers provides optimal cost-efficiency.
- The latest graphics driver should be installed to ensure optimal performance and stability.

Memory

- The actual memory (RAM) requirements depend on the size and type of the models that are to be computed.
- A 64-bit operating system is recommended on systems with more than 2 GB RAM.

Processor

- The computational speed increases approximately proportional with the CPU clock rate.
- FEFLOW supports parallel processing on multi-core / multi-processor machines (shared memory).

Disk Space

- Depending on the installed packages, between 900 MB and 2.25 GB of disk space is required.

Human Interface Devices

- The usage of a three-buttoned computer mouse is recommended for optimal convenience.

Other

- A free USB port is required for the hardware dongle if the license is not obtained via network.

2.3 FEFLOW Installation

Start the *Windows Installer* by clicking on the hyperlink *FEFLOW Program Files*. Click *Next* after each step to proceed to the next step.

1. A *Welcome* screen appears first.

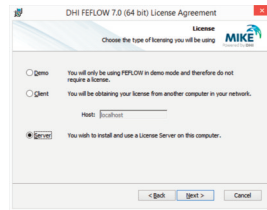


2. In the next step, the *License Agreement* has to be accepted. Please read it carefully before proceeding with the installation.

3. Wait until the installer has determined the available disk space.

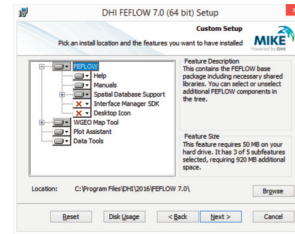


4. In the **License** window, choose **Demo** for testing FEFLOW without a license. Select **Client** if the license to be used is installed on a remote license server (Network License) and type in the name or IP number of the license server. Choose **Server** if a Single Seat License is to be used or if the machine is intended to act as a license server for a Network License.

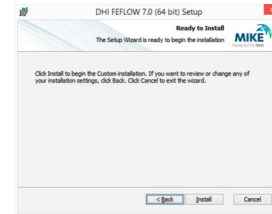


5. Select the packages to install. Details about the packages can be found on the right of the window and on page 10 of this booklet. The default

installation location is C:\Program Files\WASY\FEFLOW 7.0. For specifying a different destination directory, click **Browse**.

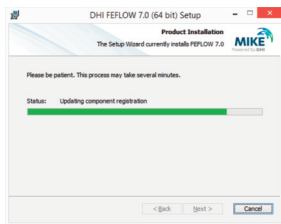


6. Start the installation or go back to change the settings.



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7. FEFLOW is installed. This may take several minutes.



8. Finish the installation by clicking **Finish**.



1.2.4 Demo Data Installation

The demo data installation is started by clicking on the hyperlink **FEFLOW Demo Data**.

2.6 Installation of the Network License Manager NetLM

Before installing the Network License Manager NetLM we recommend to uninstall all previous versions of NetLM.

The installation is started by clicking on the hyperlink **License Manager NetLM**. Follow the instructions in the installation dialog.

2.7 License installation

This step can be skipped for working in Demo mode only. All license installations have to be done with administrator privileges.

Make sure that the firewall allows (local) TCP/IP connections on port 1800.

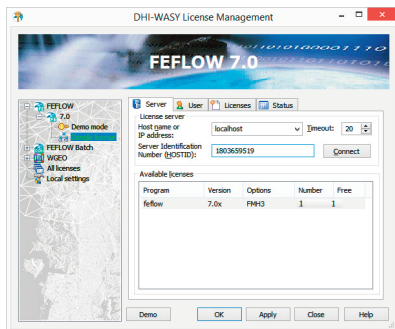
- Attach the dongle (hardware lock) to the USB port. Start the **DHI-WASY License Management** tool by clicking on the **License Administration** entry in the All Programs \FEFLOW 7.0 group of the Windows start menu.
- In the tree view on the left side, select **Dongle license** in the FEFLOW 7.0 branch. In the **Hostname or IP address** field, insert **localhost** if the dongle is installed locally, or insert the name or the IP number of the remote license server.



There is only one dongle for each copy of FEFLOW. If the dongle is lost, it can only be replaced by purchasing a new license of FEFLOW!



For the version, please note that you have to use "7.0x" because your license is valid for all sub-versions of FEFLOW 7.0.



- Click **Connect**. Check whether the number returned in the field **HOSTID** is identical to the number on the FEFLOW license sheet. In case that multiple dongles of the same brand are connected, a HOSTID mismatch may occur. In this case remove all dongles except the DHI-WASY dongle.
- Switch to the **Licenses** tab and enter the license information from the FEFLOW license sheet. The license information can be pasted from the clipboard if the license has been received digitally. Copy the selected section in the license document to the clipboard and use the **Paste license from clipboard** button to insert all the license information at once. Please also make sure that the same license type as on the license sheet is selected:

- Single seat license – FEFLOW can be run only on the computer the dongle is attached to.
- Network license – FEFLOW can be used on any computer connected to the license server via TCP/IP network (LAN or WAN/internet).
- Click **Install**. A message box indicates that the license has been successfully installed. If the installation was not successful, check all the license information in comparison to the information provided on the license sheet. The information has to be identical in all details.
- Click **OK** to close the **DHI-WASY License Management** dialog.
- Choose **FEFLOW Standard** from the DHI-WASY program group or double click on the desktop icon to start FEFLOW.

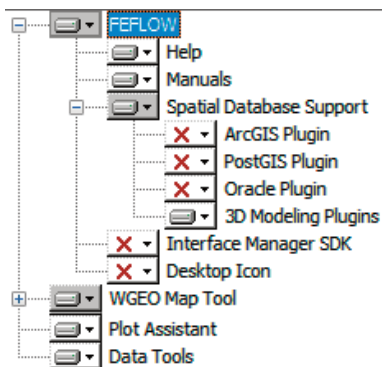
Using a Network License for FEFLOW, the DHI-WASY License Manager can be installed on any computer within the network (LAN or WAN) without the complete FEFLOW installation. Clients need to connect via TCP/IP on port 1800 to have access to the license server.

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3 Installation Packages

Packages for installation can be selected during the first installation or by re-running the installation in **Modify** mode. A description for each package can be shown in the right part of the **Custom setup** dialog.

The following packages are available:



FEFLOW

FEFLOW program files - required for running FEFLOW

- Help - FEFLOW help system
- Manuals - FEFLOW manuals in pdf format
- Spatial Database Support: Optional components for spatial database (ArcGIS, PostGIS and Oracle) and geological modeling file access from FEFLOW
- Interface Manager SDK - optional development kit for the open programming interface IFM
- Options for desktop shortcut icons

WGEO

Georeferencing, geoimaging and transformation software - a WGEO license is installed automatically. Specific transformation routines may require separate licensing.

Plot Assistant

Very simple GIS-like software for producing plots with FEFLOW data.

Data Tools

Scripts for data checking and format conversion.

In the **Demo Data** installation there are the following packages:

- Examples - example models
- Exercise - data for the demonstration exercise
- Tutorial - data for the tutorials (User Manual)
- Benchmarks - benchmark models



WGEO Basis is licensed automatically with FEFLOW. If a license dialog shows up, just click on Cancel.